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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/519,294

07/25/2005

Yasuhiko Nishi

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EXAMINER

SANTIAGO, MARICELI

ART UNIT

PAPER NUMBER

2879

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/519,294	<b>Applicant(s)</b> NISHI ET AL.	
	<b>Examiner</b> Mariceli Santiago	<b>Art Unit</b> 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29-42 is/are allowed.
- 6) ☒ Claim(s) 1-24 and 26 is/are rejected.
- 7) ☒ Claim(s) 26-28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/04, 7/05</u>   | 6) <input type="checkbox"/> Other: _____                          |

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## **DETAILED ACTION**

### ***Response to Amendment***

Receipt of the Amendment, filed on December 23, 2004, is acknowledged.

Claims 1-42 are pending in the instant application.

### ***Specification***

The abstract of the disclosure is objected to because the abstract should be limited to a single paragraph on a separate sheet within the range of 50 to 150 words. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 3-18 rejected under 35 U.S.C. 102(b) as being anticipated by Tsuboi (JP 201-35362).

Regarding claims 1 and 3-13, Tsuboi discloses a tape-like material (301) containing carbon nanotubes.

It is noticed that claims 1 and 3-13 incorporate limitation as to the method of making the carbon nanotubes, consequently, claims 1 and 3-13 are considered “product-by-process” claims. In spite of the fact that a product-by-process claim may recite only process limitations, it is the product and not the recited process that is covered by the claim. Further, patentability of a claim to a product does not rest merely on the difference in the method by which the product is

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made. Rather, is the product itself which must be new and not obvious. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Accordingly, the structure implied by the process steps would be considered for assessing the patentability of product-by-process claims over the prior art (see MPEP 2113).

Regarding claim 14, Tsuboi discloses a field emission electrode including the tape-like material (301) containing carbon nanotubes wherein the tape-like material is bonded to a substrate (101).

Regarding claims 15-16, Tsuboi discloses a field emission electrode having a torn tape-like material (301) adhering to the substrate (101). It is noticed that limitations with respect to the method of manufacturing are not germane to the issue of patentability of the claimed device.

Regarding claim 17, Tsuboi discloses a process for producing a field emission electrode comprising the step of bonding the tape-like material to a substrate (101) with a conductive adhesive.

Regarding claims 18-19, Tsuboi discloses a process for producing a field emission electrode, the process comprising the step of pinching the tape-like material containing carbon nanotubes between a substrate and a material more deformable than the substrate to apply a pressure, and then separating the substrate and the deformable material (i.e., peeling), whereby the field emission electrode has a torn tape-like material adhering to the substrate (cause by the peeling step).

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Claims 20-24 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Huang et al. (JP 2002-179417 A, for rejection purposes English counterpart US 2004/0050686 will be as the translation of the JP reference).

Regarding claim 20, Huang discloses a process for producing carbon nanotubes, wherein a path of arc discharge is formed along the stream of a gas supplied from an anode (20) to a cathode (40) comprising a carbon material.

Regarding claim 21, Huang discloses a process for producing carbon nanotubes by arc discharge, wherein an arc is generated while an inert gas or an inert gas-containing mixed gas is jetted onto a cathode (40) comprising a carbon material from the inside of a hollow electrode (20) used as an anode.

Regarding claim 22, Huang discloses a process for producing carbon nanotubes, wherein a path of arc discharge is formed along the stream of a gas supplied together with a metal powder or metal compound powder serving as a catalyst, from an anode (20) to a cathode (40) comprising a carbon material.

Regarding claim 23, Huang discloses a process for producing carbon nanotubes by arc discharge, wherein an arc is generated while an inert gas or an inert gas-containing mixed gas is jetted together with a metal powder or metal compound powder (¶[0038]) serving as a catalyst onto a cathode (40) comprising a carbon material from the inside of a hollow electrode (20) used as an anode.

Regarding claim 24, Huang discloses a process wherein arc discharge is performed in a normal atmosphere.

Regarding claim 26, Huang discloses a process wherein argon or a mixture of argon gas and hydrogen gas is used as the inert gas or inert gas-containing mixed gas (¶[0039]).

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuboi (JP 201-35362).

Regarding claims 1, 3-13, Tsuboi discloses a tape-like material (301) containing flocculated carbon nanotubes. Tsuboi fails to exemplify the limitation having a thickness in the range of 10-50  $\mu\text{m}$  and a width in the range of 1-10 nm. However, it has been held that a change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955). It would have been obvious to one having ordinary skill in the art to provide a thickness in the range of 10-50  $\mu\text{m}$  and a width in the range of 1-10 nm, since such a modification would have involve a mere change in the size of a component.

***Allowable Subject Matter***

Claims 29-42 are allowed over the prior art of record.

Claim 25 and 27-28 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 29-42, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claims 29-42, and specifically

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comprising the limitation of the anode and the cathode are relatively moved so as to move a cathode spot of an arc on the cathode.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mariceli Santiago whose telephone number is (571) 272-2464. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Mariceli Santiago/

Primary Examiner, Art Unit 2879